ABSTRACT OF THE DISCLOSURE

The object of the present invention is to provide steering responsiveness and linear steering perception when the steering wheel is restored, even when there is excessive, sudden steering beyond a predetermined tolerance ($-\theta_E \leq \theta \leq \theta_E$).

If a steering angle θ suddenly enters a "play" range at the left and right ends of the θ-X_n plane, the steering direction (turning direction/restoring direction) of the steering wheel can lead to a localized change in the gear ratio ($\partial X_n/\partial\theta$). Fig. 3 is a graph showing an example of this type of hysteresis loop. When a driver tries to get out of the "play" range by turning the steering wheel in the restoring direction, a positive value can be achieved for the localized gear ratio based on the above hysteresis loop even in the "play" range. Thus, based on this arrangement, if the steering angle θ exceeds the tolerance range, the localized gear ratio can be prevented from being continuously 0 when the steering wheel is immediately turned in the restoring direction.